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(54) **MECHANICAL DISPENSER FOR PERFORATED SHEET PRODUCTS**

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A47K 10/38	(2006.01)
A47K 10/36	(2006.01)

(52) **U.S. Cl.**

CPC ***A47K 10/40*** (2013.01); ***A47K 10/3827*** (2013.01); *A47K 2010/3681* (2013.01); *A47K 2010/3863* (2013.01)

(58) **Field of Classification Search**

CPC A47K 10/3827; A47K 10/40; A47K 2010/3233; A47K 2010/3681; A47K 2010/3863

See application file for complete search history.

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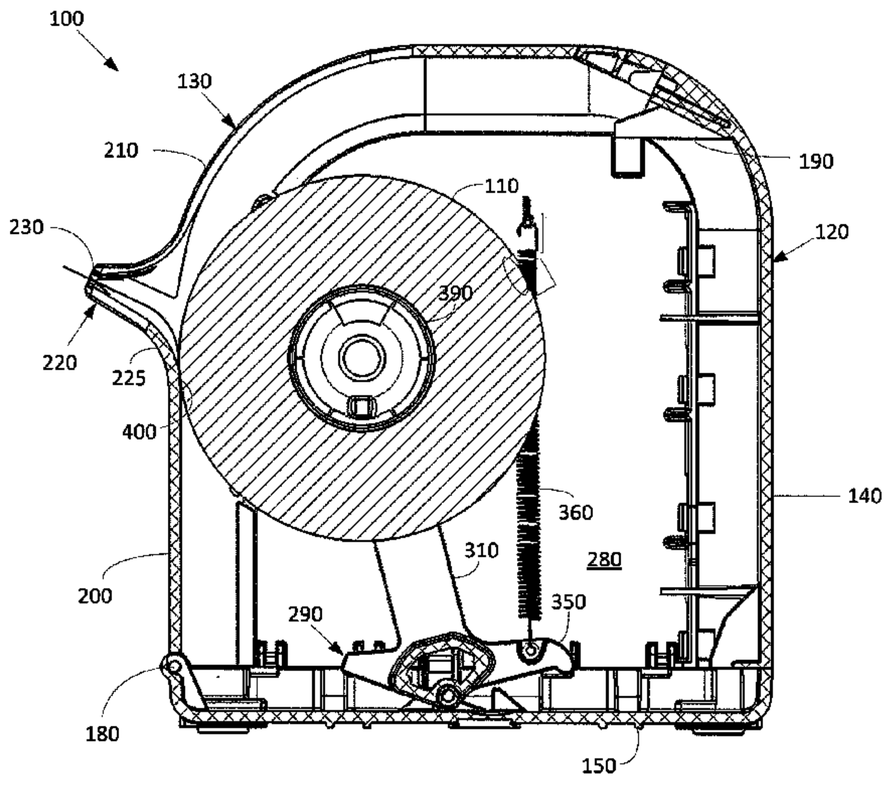
Primary Examiner — William E Dondero

(57) **ABSTRACT**

The present application provides a dispenser for a roll of sheet product. The dispenser may include a housing with a first wall, a discharge chute, and a roll support mechanism positioned within the housing. The roll support mechanism forces the roll against the first wall at a fixed contact area.

30 Claims, 11 Drawing Sheets



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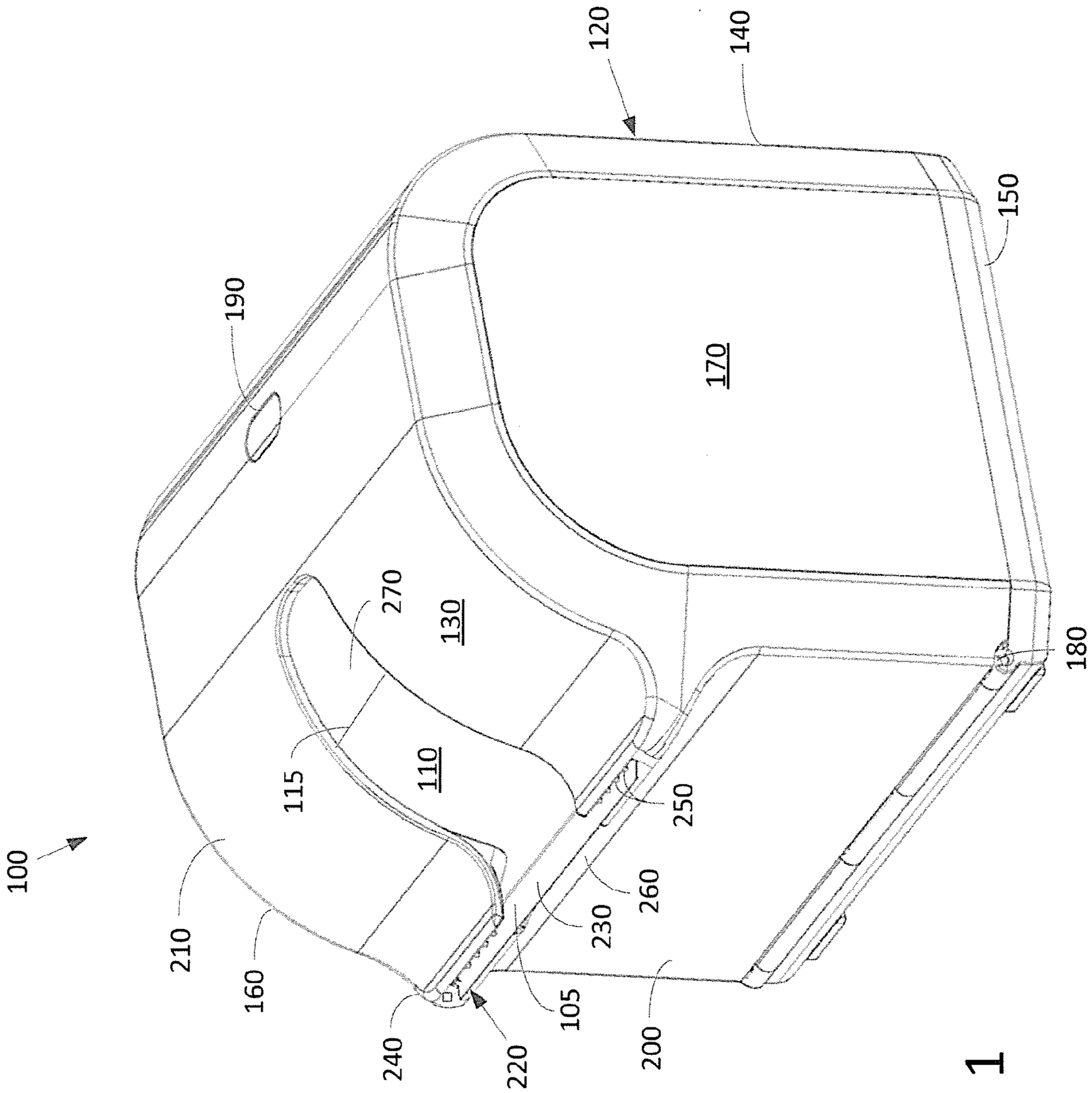
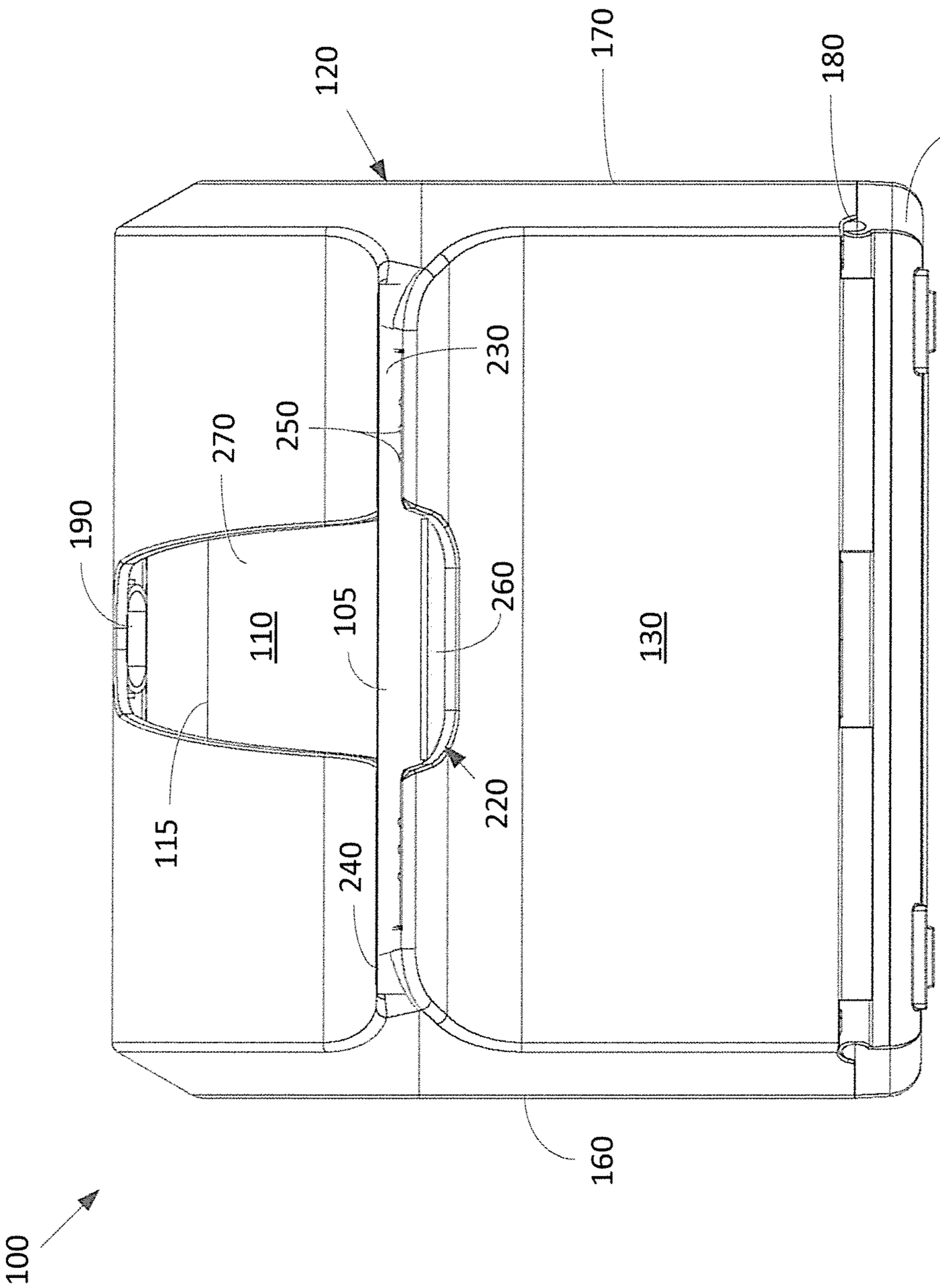

100
110
115
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270

FIG. 1


120
170
180
150
230
270
250
190
260
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105
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115
220
240
160
100

FIG. 2

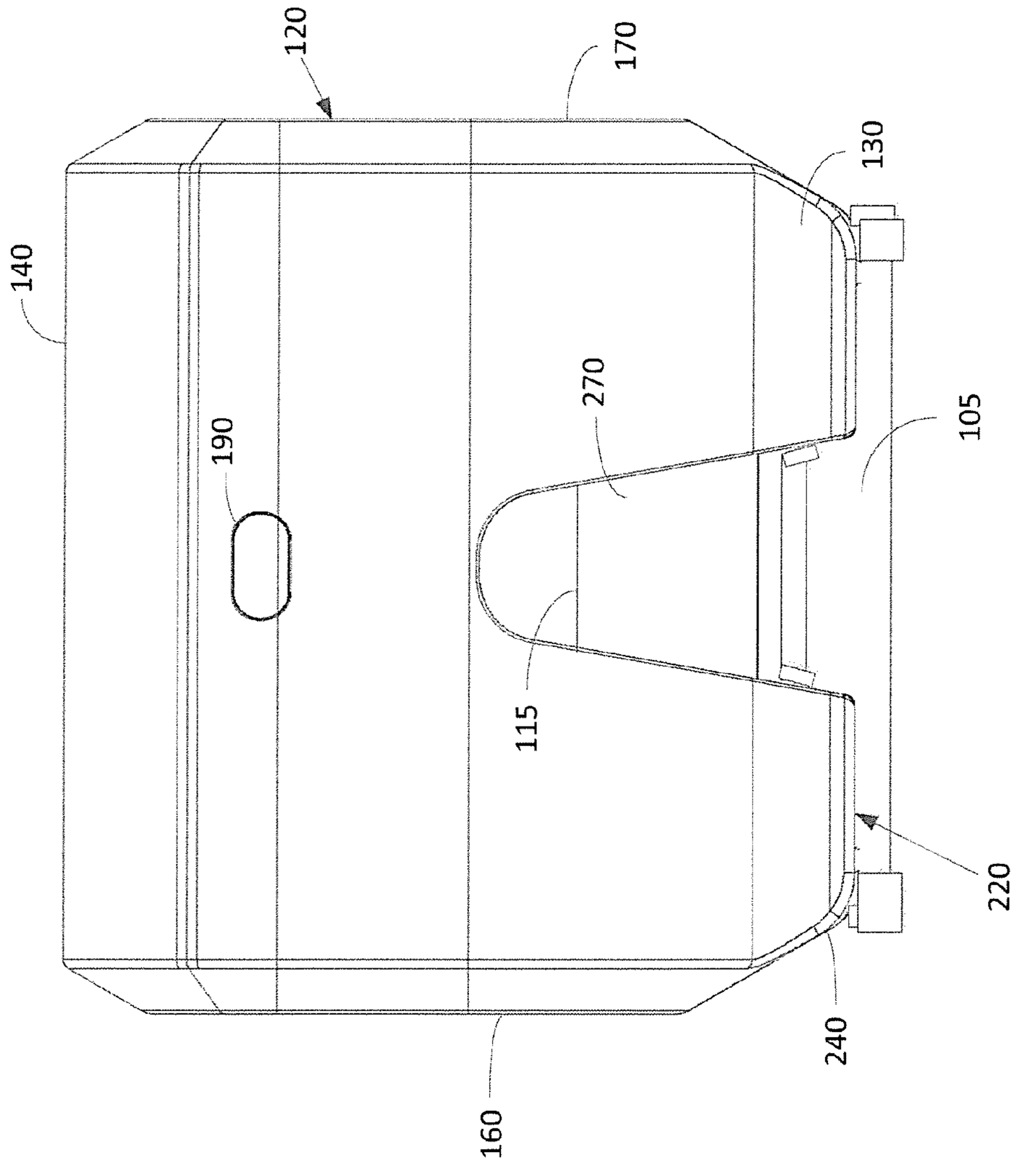


FIG. 3

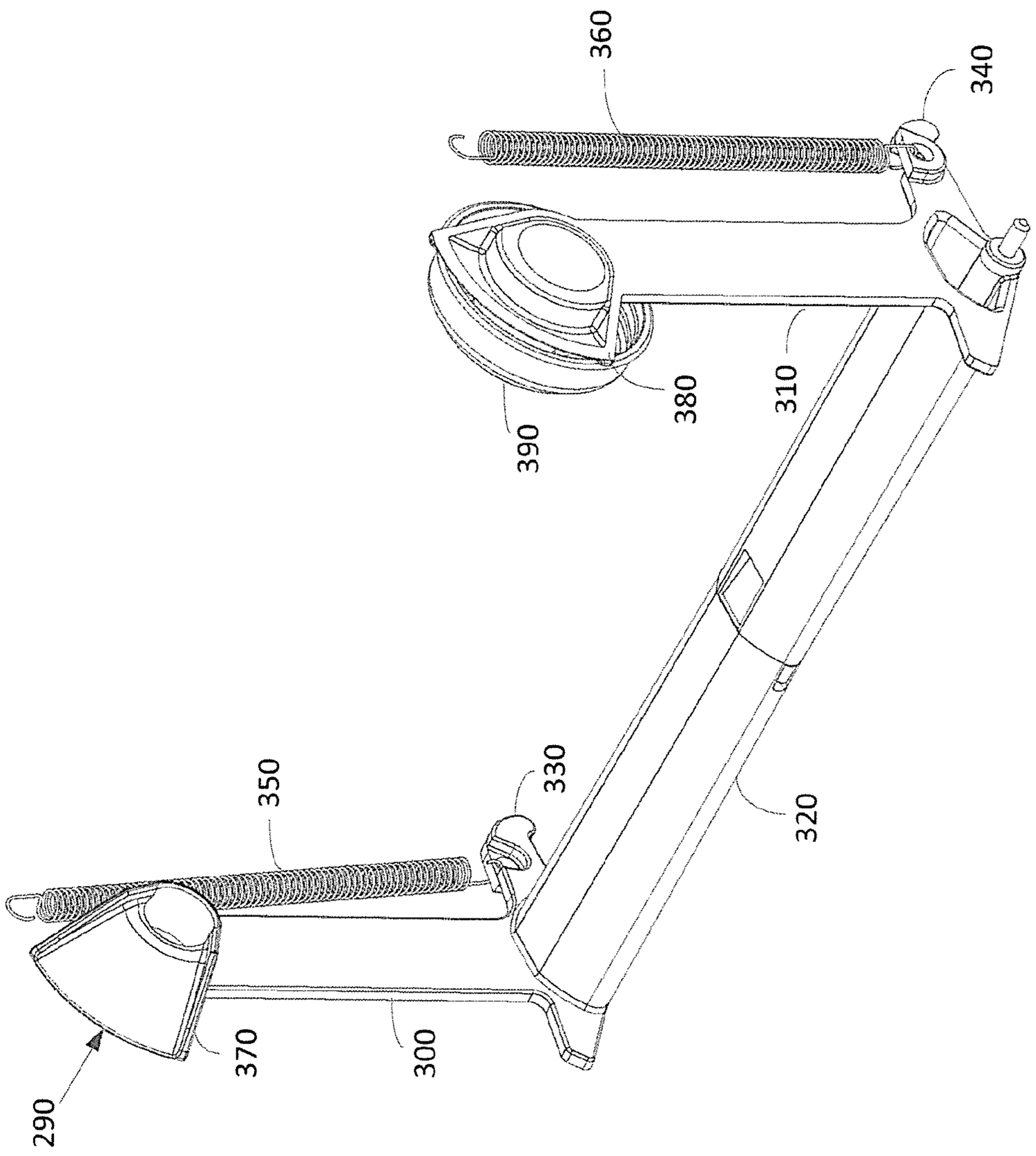


FIG. 4

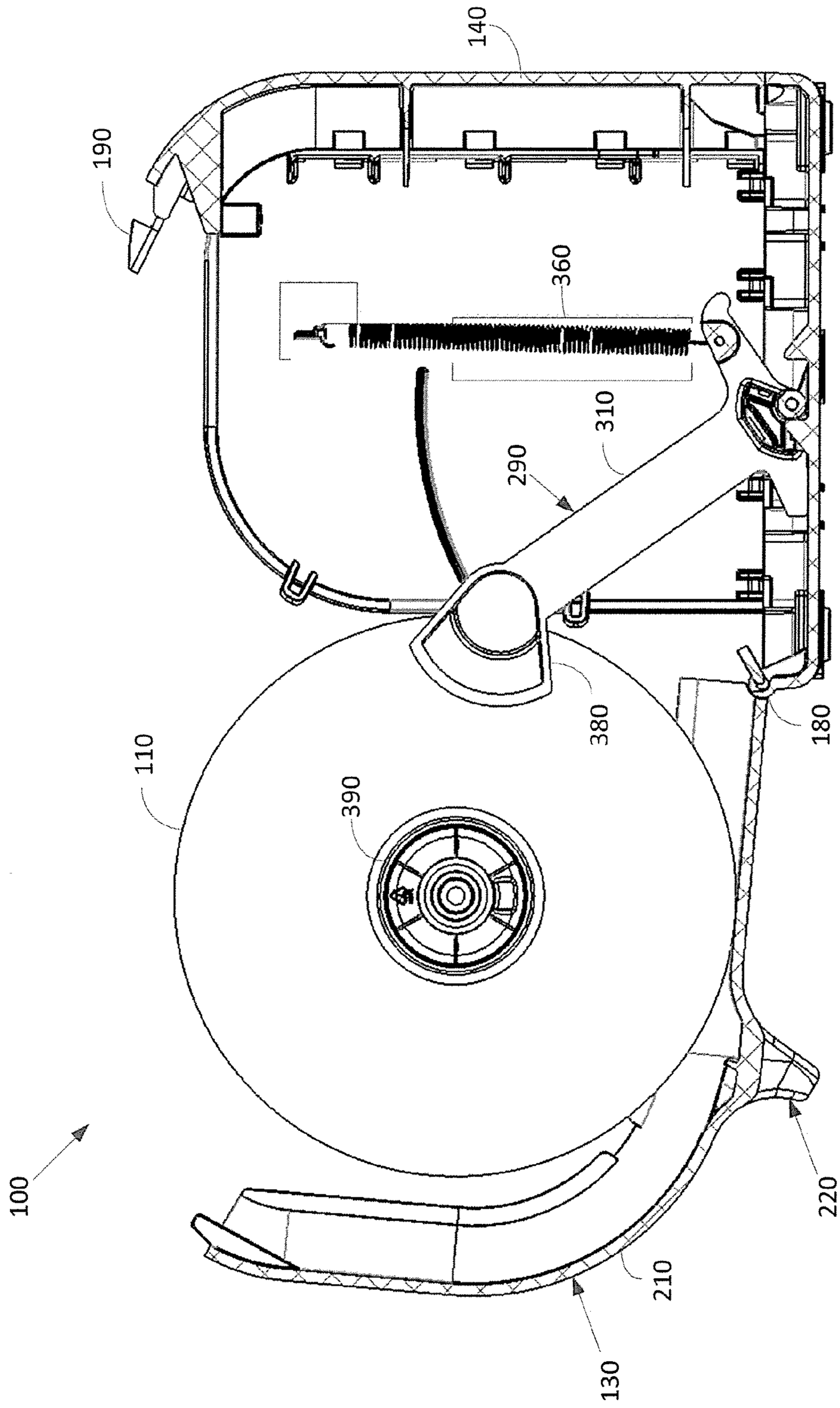


FIG. 5

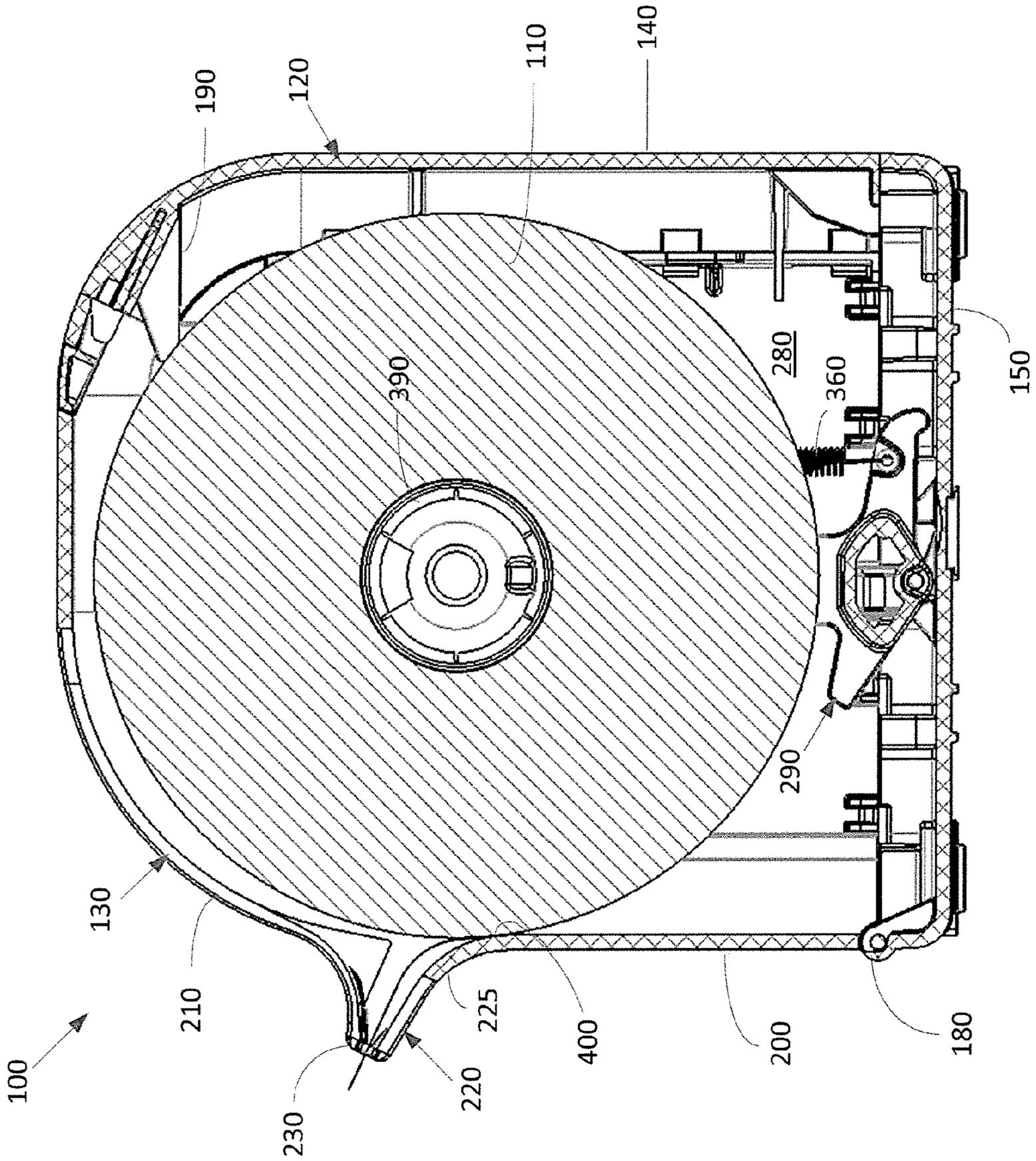

190
120
110
140
390
280
360
150
290
130
210
225
400
200
180
100
220
230

FIG. 6

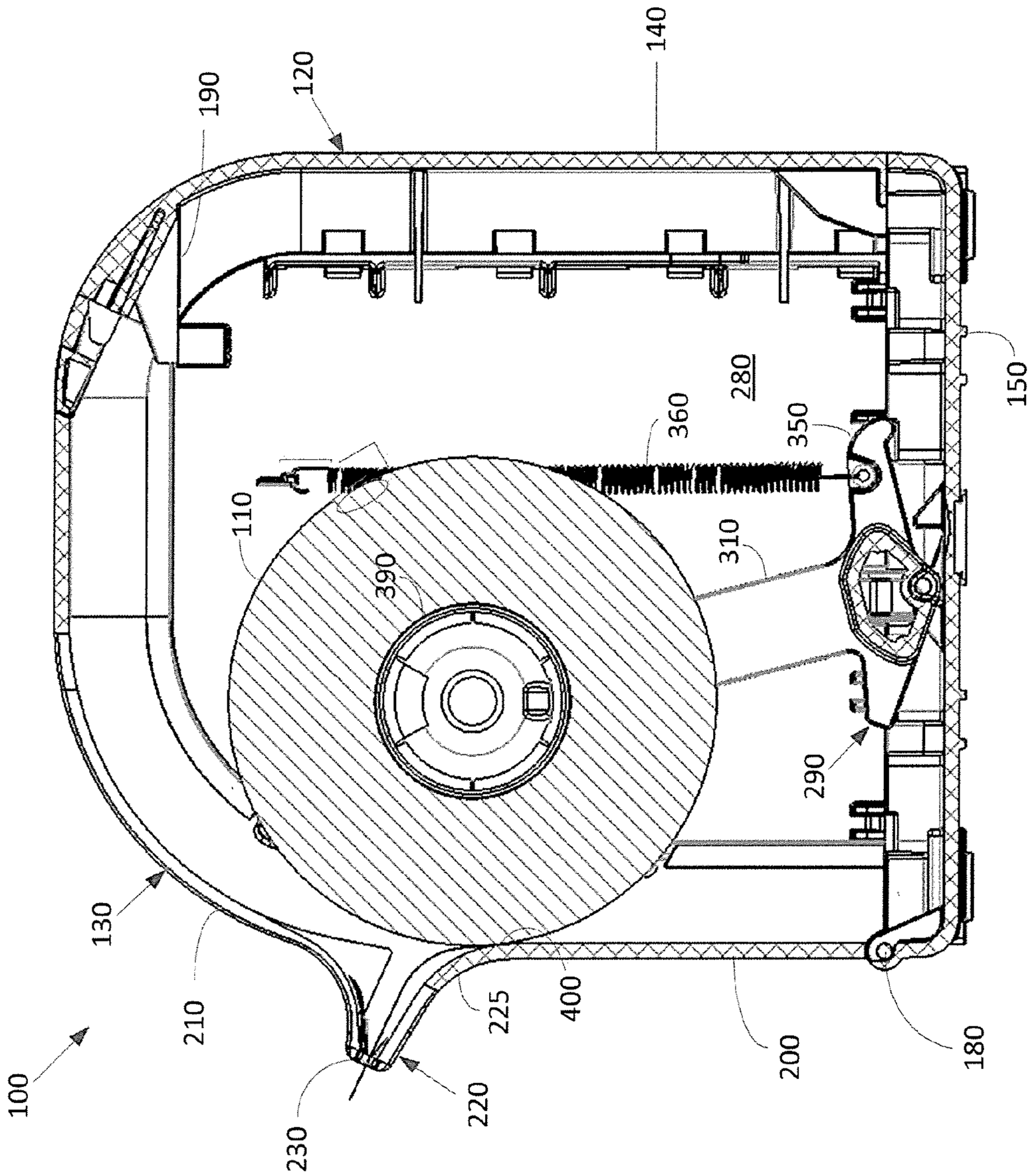
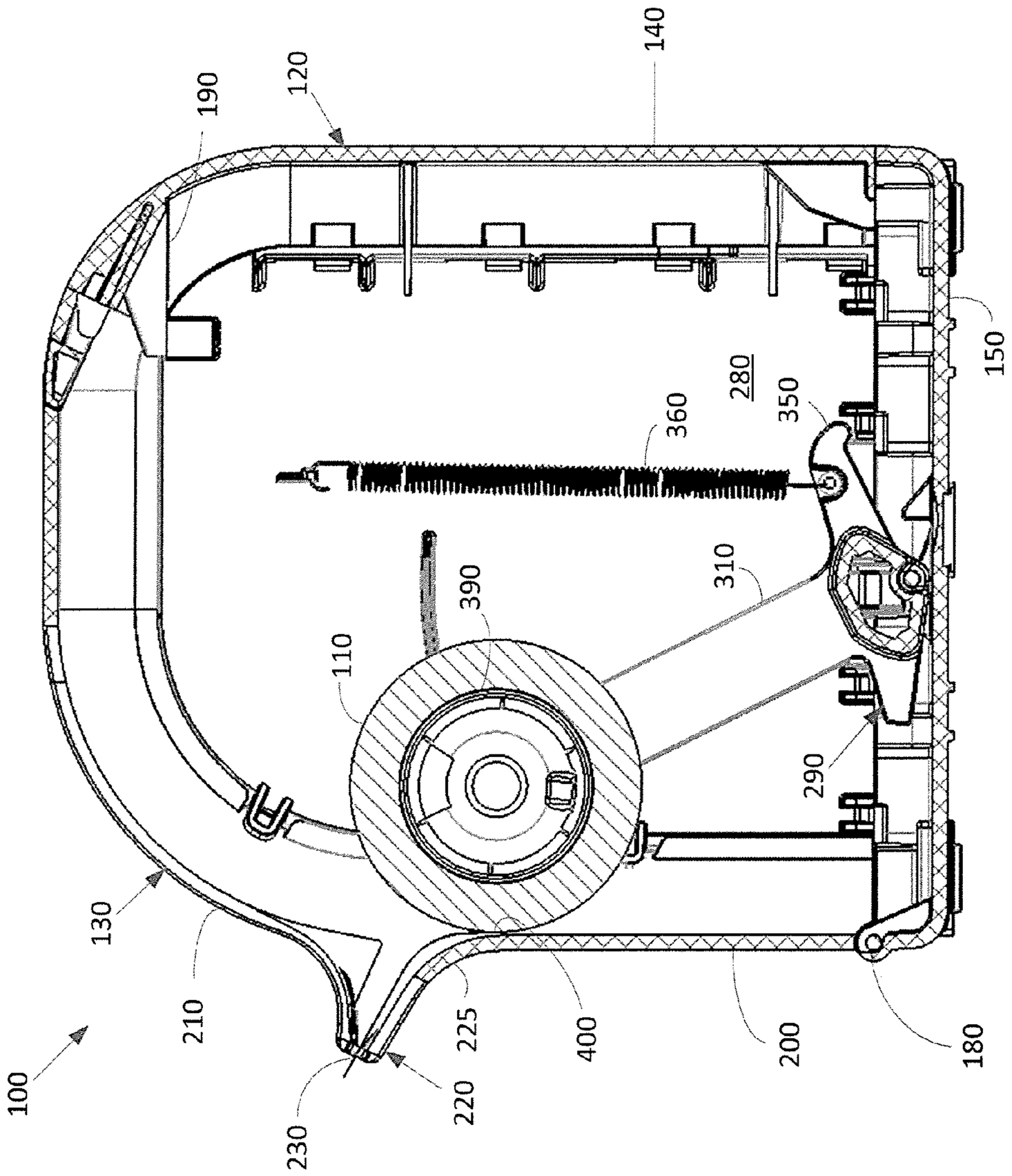

190
120
140
150
280
360
350
110
310
390
290
130
210
225
400
200
180
220
230
100

FIG. 7


190
120
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150
280
360
350
310
390
110
290
130
210
225
400
200
180
100
220
230

FIG. 8

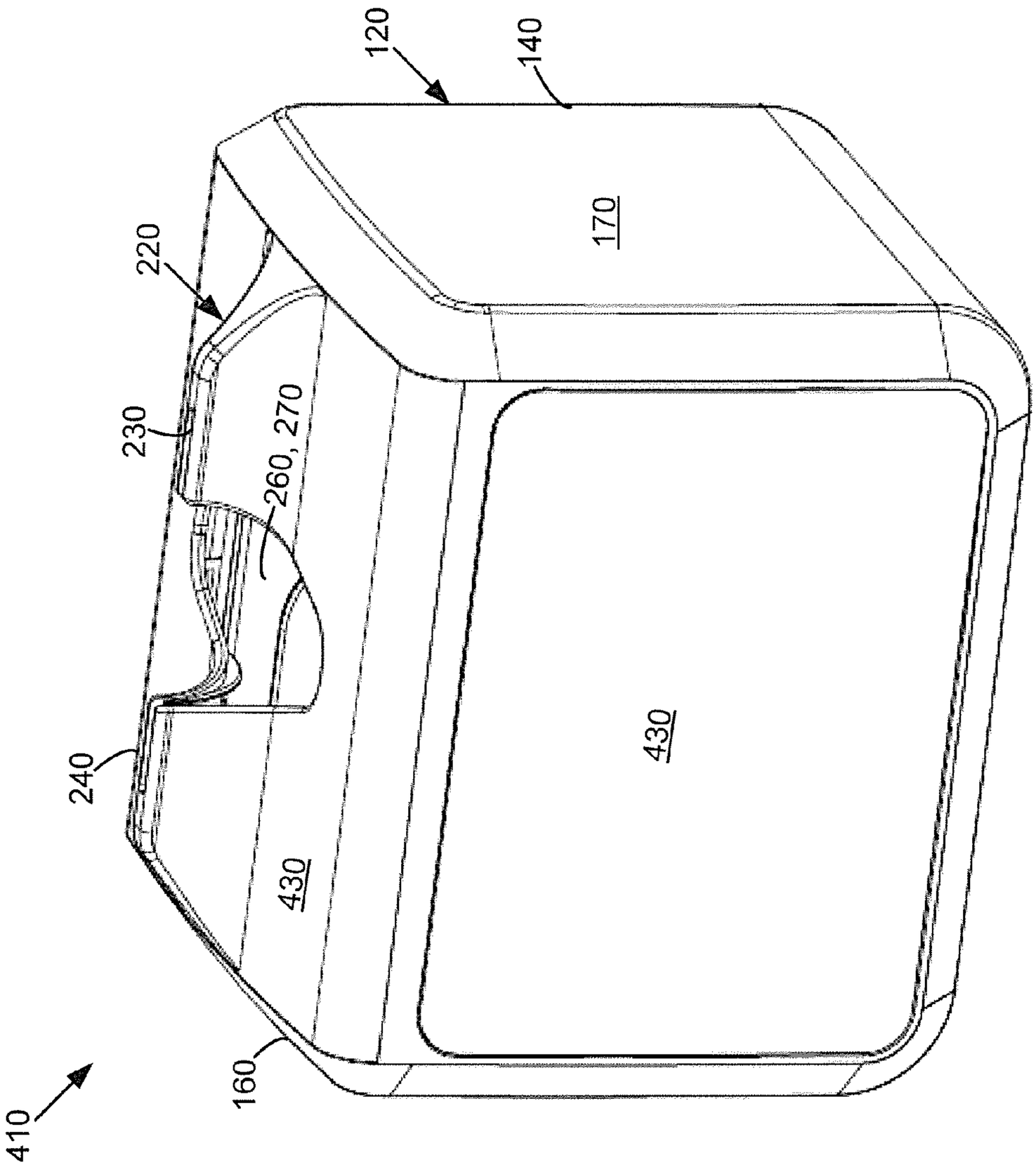

FIG. 9

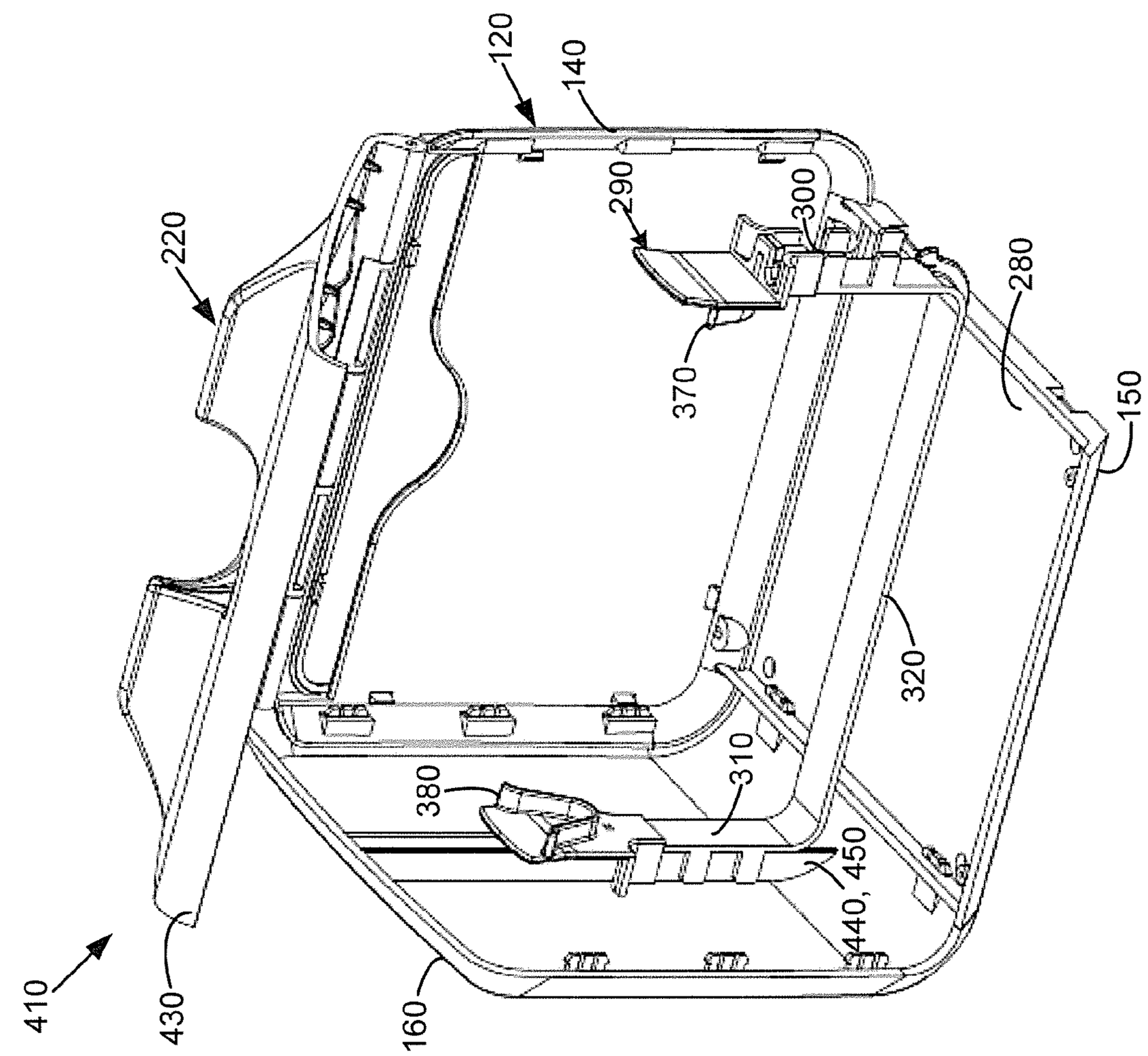

FIG. 10

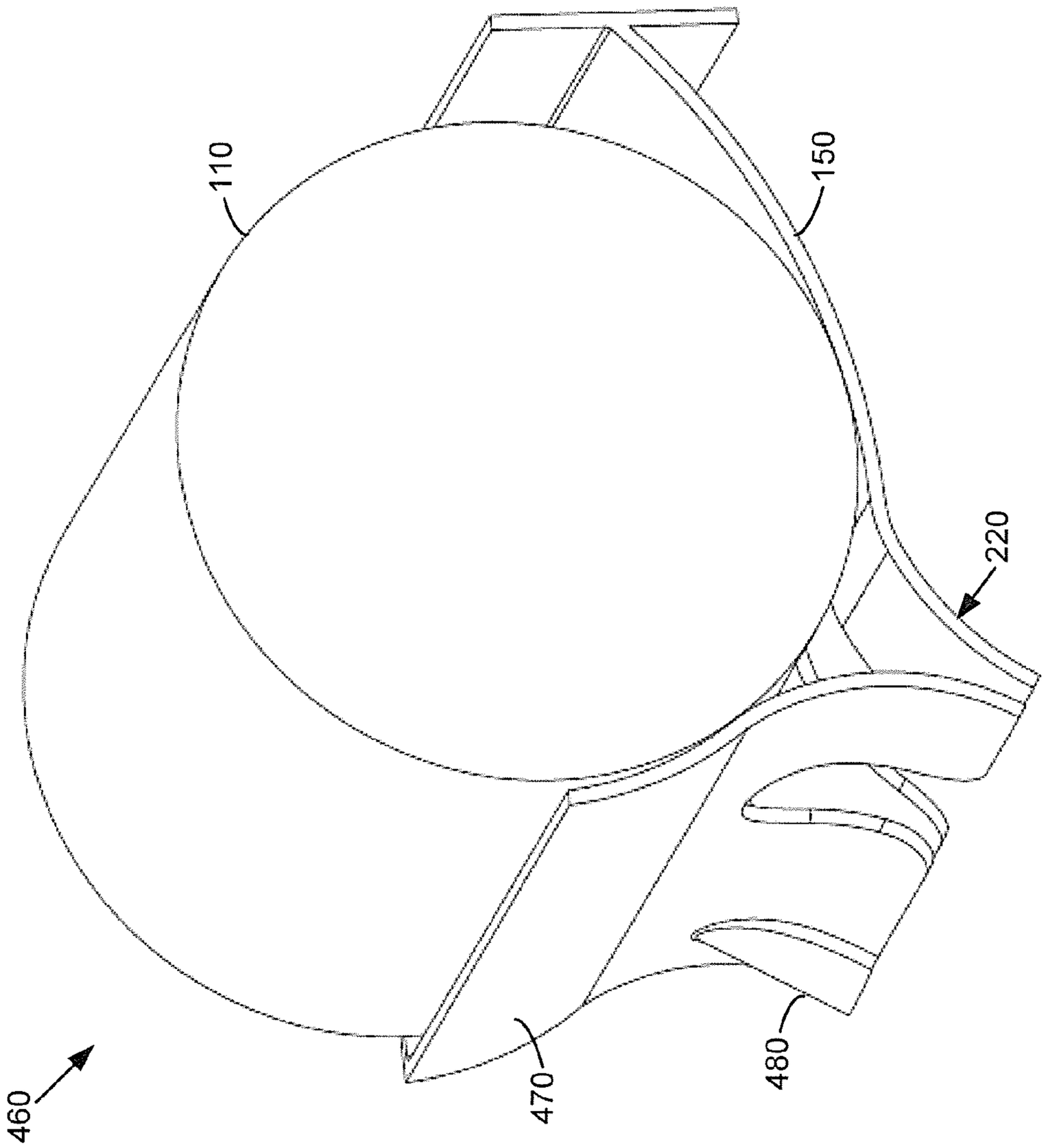

FIG. 11

MECHANICAL DISPENSER FOR PERFORATED SHEET PRODUCTS

TECHNICAL FIELD

The present application and the resultant patent relate generally to sheet product dispensers and more particularly relate to mechanical dispensers for perforated sheet products that, among other things, limit or avoid the loss of an adjacent sheet during a dispense.

BACKGROUND OF THE INVENTION

Generally described, sheet product dispensers may include a roll support mechanism configured to rotatably support a roll of sheet product for dispensing the sheet product therefrom. During the use of such dispensers, the user may grasp a tail portion (i.e., an exposed free end portion) of the roll and apply a pull force thereto sufficient to rotate the roll about the roll support mechanism and unwind a length of sheet product from the roll. The user may separate the unwound length of sheet product from the roll by tearing the sheet product along a predefined area of weakness, such as a line of perforations, or elsewhere as desired.

From a user's perspective, a relatively low pull force may be preferred to dispense the sheet product. During an aggressive or a "jerking type" pull, however, the roll may not overcome "at rest" static inertia such that the roll may not rotate at the same speed as the sheet being pulled by the user. As a result, the lead sheet may be separated from the roll before the next tail reaches the dispensing chute. This may be an issue particularly once the diameter of the roll is reduced such that the distance between the roll and the dispensing chute increases and all of the pull forces must be resisted by the perforations in that distance. Similarly, once the roll does develop sufficient inertial rotation, the roll may continue to rotate so as to pull the tail out of the dispensing chute. Another issue may be the angle at which the lead sheet is grasped. If the lead sheet is grasped towards one of the sides, the pull force may be focused at the outer edge so as to initiate a tear that progresses across the perforations before the next tail may be available. Alternatively, if the sheet is pulled along the middle, multiple sheets may be removed before a tear is initiated.

The impact of each of these drawbacks also may vary as the outer diameter of the roll decreases. There is thus a desire for improved sheet product dispensers and methods of providing a single sheet product while ensuring the availability of an adjacent sheet.

SUMMARY OF THE INVENTION

The present application and the resulting patent thus provide a dispenser for a roll of sheet product. The dispenser may include a housing with a first wall, a discharge chute, and a roll support mechanism positioned within the housing. The roll support mechanism forces the roll of sheet product against the first wall at a fixed contact area so as to resist aggressive pull forces.

The present application and the resultant patent further provide a method of dispensing a sheet product from a roll of sheet product in a dispenser. The method may include the steps of positioning the roll within the dispenser in an underfeed orientation, forcing the roll against a wall of the dispenser, pulling a first sheet product through a discharge chute with a restricted width, and separating a number of perforations between the first sheet product and a second sheet product as the perforations pass in or about the restricted width.

The present application and the resultant patent further provide a dispenser for a roll of sheet product. The dispenser may include a top cover with a discharge chute and a biased roll support mechanism. The biased roll support mechanism may include a pair of spring loaded arms sized to accommodate the roll of sheet product for easy self-loading therein.

The present application and the resultant patent further provide a dispenser for a roll of sheet product. The dispenser may include a housing with a first wall, a discharge chute with a restricted width, and a roll support mechanism positioned within the housing. The roll support mechanism forces the roll against the first wall so as to resist aggressive pull forces.

The present application and the resultant patent further provide a method of dispensing sheet product with perforations from a roll of sheet product in a dispenser. The method may include the steps of positioning the roll within the dispenser, pulling a first sheet product in a tangential direction, passing the first sheet product through a discharge chute with a restricted width, and separating a number of perforations between the first sheet product and a second sheet product as the perforations pass in or about the restricted width.

The present application and the resultant patent further provide a method of loading a roll of sheet product into a dispenser. The method may include the steps of placing the roll in a curved cover of the dispenser, biasing a roll support mechanism towards the roll in the curved cover of the dispenser, rolling the roll into the roll support mechanism, and closing the curved cover.

These and other features and improvements of the present application and the resultant patent will become apparent to one of ordinary skill in the art upon review of the following detailed description when taken in conjunction with the several drawings and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a mechanical dispenser as may be described herein.

FIG. **2** is a front plan view of the mechanical dispenser of FIG. **1**.

FIG. **3** is a top plan view of the mechanical dispenser of FIG. **1**.

FIG. **4** is a perspective view of a roll support mechanism of the mechanical dispenser of FIG. **1**.

FIG. **5** is a side cross-sectional view of the mechanical dispenser of FIG. **1** with a full roll and an open front cover.

FIG. **6** is a side cross-sectional view of the mechanical dispenser of FIG. **1** with a full roll.

FIG. **7** is a side cross-sectional view of the mechanical dispenser of FIG. **1** with a partially depleted roll.

FIG. **8** is a side cross-sectional view of the mechanical dispenser of FIG. **1** with a partially depleted roll.

FIG. **9** is a perspective view of an alternative embodiment of a mechanical dispenser as may be described herein.

FIG. **10** is a partial perspective view of an interior of the mechanical dispenser of FIG. **9**.

FIG. **11** is a perspective view of an alternative embodiment of a portion of a mechanical dispenser as may be described herein.

DETAILED DESCRIPTION

As used herein, the term "sheet product" is inclusive of natural and/or synthetic cloth or paper sheets. Sheet products

may include both woven and non-woven articles. There are a wide variety of non-woven processes for forming sheet products, which can be either wetlaid or drylaid. Examples of non-woven processes include, but are not limited to, hydroentangled (sometimes called "spunlace"), double re-creped (DRC), airlaid, spunbond, carded, papermaking, and melt-blown processes. Further, sheet products may contain fibrous cellulosic materials that may be derived from natural sources, such as wood pulp fibers, as well as other fibrous material characterized by having hydroxyl groups. Examples of sheet products include, but are not limited to, wipers, napkins, tissues, such as bath tissues, towels, such as paper towels, and other fibrous, film, polymer, or filamentary products. In general, sheet products are thin in comparison to their length and width and exhibit a relatively flat planar configuration but are flexible to permit folding, rolling, stacking, and the like. Sheet products may include pre-defined areas of weakness, such as lines of perforations, extending across their width between individual sheets to facilitate separation or tearing of one or more sheets from a roll or folded arrangement of the sheet product at discrete intervals. The individual sheets may be sized as desired to accommodate particular uses of the sheet product.

As used herein, the term "roll of sheet product" refers to a sheet product formed in a roll by winding layers of the sheet product around one another. Rolls of sheet product may have a generally circular cross-sectional shape, a generally oval cross-sectional shape, or other cross-sectional shapes according to various winding configurations of the layers of sheet product. Rolls of sheet product may be cored or coreless.

As used herein, the term "cored roll of sheet product" refers to a roll of sheet product that includes a core positioned therein. In this manner, the layers of the sheet product are wound around a core of paperboard or other material. A cored roll of sheet product includes a central opening extending therethrough along a longitudinal axis of the roll and defined by the core. A cored roll of sheet product may include one or more removable shafts, plugs, or other members positioned within the central opening for structural support during shipping or transportation, which may or may not be removed prior to loading the roll in or on a sheet product dispenser.

As used herein, the term "coreless roll of sheet product" refers to a roll of sheet product that does not include a core positioned therein. In this manner, the layers of the sheet product are not positioned about a core of paperboard or other material. Instead, a coreless roll of sheet product includes a central opening extending therethrough along a longitudinal axis of the roll and defined by an inner layer of the sheet product itself A coreless roll of sheet product may, however, include one or more removable shafts, plugs, or other members positioned within the central opening for structural support during shipping or transportation and removed prior to loading the roll in or on a sheet product dispenser.

As used herein, the term "life of a roll of sheet product" refers to a duration of time over which sheet product is available to be dispensed from a particular roll of sheet product. The roll life begins when sheet product is first available to be dispensed from the roll and ends when all of the sheet product of the roll that can be dispensed from the roll has been dispensed (e.g., excluding the last one or more layers that may be adhered to a core of a cored roll of sheet product).

As used herein, the term "pull force resistance" refers to a resistance opposing a pull force applied by a user to a tail portion of a roll of sheet product to rotate the roll and unwind a length of sheet product from the roll. In this manner, the pull force resistance resists rotation of the roll and unwinding of sheet product from the roll, and the pull force applied by the user must be greater than the pull force resistance in order to dispense sheet product from the roll.

Referring now to the drawings, in which like numerals refer to like elements throughout the several views, FIGS. **1-3** show a mechanical dispenser **100** as may be described herein. The mechanical dispenser **100** may be configured to allow a user to obtain a length of a sheet product **105** from a roll **110** of sheet product **105** positioned within the mechanical dispenser **100**. The roll **110** of sheet product **105** may be formed in a conventional manner such that layers of the sheet product **105** are wound around one another. The roll **110** of sheet product **105** may be a coreless roll or a cored roll. The sheet product **105** may include predefined areas of weakness, such a line of perforations **115** extending across the width of the sheet product **105** between individual sheets **105** thereof. In this manner, the user may separate one or more sheets **105** from the roll **110** by tearing the sheet product **105** along the perforations **115** in a conventional manner.

The mechanical dispenser **100** may include an outer housing **120**. The outer housing **120** may be made from a molded thermoplastic or from any suitable type of substantially rigid materials or combinations thereof. The outer housing **120** may include a first wall or a front cover **130**. The outer housing **120** also may include a rear wall **140**, a base **150**, a first sidewall **160**, and a second sidewall **170**. The rear wall **140**, the base **150**, the first sidewall **160**, and the second sidewall **170** may be formed as a single element and/or they may be rigidly connected in whole or in part. The outer housing **120**, and the components thereof, may have any suitable size, shape, or configuration.

The front cover **130** may be moveable so as to open the outer housing **120** for loading the roll **100** therein. Specifically, the front cover **130** may extend from a pivot rod **180** positioned about the base **150** to a locking mechanism **190** positioned about the rear wall **140**. The front cover **130** may be opened by releasing the locking mechanism **190** and pivoting the front cover **130** about the pivot rod **180**. The locking mechanism **190** may be of conventional design. The front cover **130** may have a bottom substantially straight portion **200** positioned about the base **150** and a top substantially curved portion **210** positioned about the rear wall **140**. The shape of the curved portion **210** may accommodate the expected outer diameter of a full new roll **110** therein. Other components and other configurations may be used herein.

The mechanical dispenser **100** may include a discharge chute **220**. The discharge chute **220** may be positioned on the front cover **130** between or about the substantially straight portion **200** and the substantially curved portion **210**. The discharge chute **220** may extend outwardly from the front cover **130**. The discharge chute **220** may extend outwardly from the front cover **220** at an upward angle along a chute curved portion **225**. The angle and length of the chute curved portion **225** may vary.

The discharge chute **220** may define a discharge slot **230** at the end thereof. Although the discharge slot **230** is shown as being substantial flat from one end to the other, the discharge slot **230** also may be curved with an apex being positioned about in the middle or elsewhere. The nature of the curve and the overall shape of the discharge slot **230** may vary.

The discharge chute **220** and/or the discharge slot **230** may have a restricted width **240** therein. Specifically, the restricted width **240** of the discharge slot **230** may be narrower than a width of the sheet product **105** intended to be used therewith. For example, the restricted width **240** of the discharge slot **230** may be a slot width that may be about five percent (5) to about fifty (50) percent smaller than the expected width of the sheet product **105**. The size of the restricted width **240** may be based upon the relative properties of the sheet product **105** and the strength of the perforations **115**. The restricted width **240** may be progressively smaller along the length of the discharge chute **220** and/or the restricted width **240** may be a blunt obstruction at or about the discharge slot **230**. Specifically, the restricted width **240** may be created by limiting the width of the discharge slot **230** or by placing obstructions and the like therein. As will be described in more detail below, the restricted width **240** may promote wrinkling and/or buckling of the sheet product **105** so as to promote the timely bursting of the perforations **115** as the perforations **115** pass through and/or thereabout. (The terms "bursting", "separating", "tearing", "ripping", and like may be used interchangeably herein.) Other dimensions and other configurations may be used herein.

The discharge slot **230** may have a number of protrusions **250** positioned therein. The protrusions **250** may have any suitable size, shape, or configuration. The protrusions **250** may provide additional resistance so as to assist in bursting the perforations **115** in the sheet product **105**. The protrusions **250** also may act as one way restraints against the sheet product **105** from being pulled back into the discharge chute **220**. In addition to the use of the protrusions **250**, reed-type valves, one-way tabs, and the like also may be positioned in the discharge slot **230** and/or elsewhere along the discharge chute **220** so as to limit the sheet product **105** from being pulled back into the discharge chute **220** or into the outer housing **120**. Other components and other configurations may be used herein.

The discharge chute **220** may define a lower aperture **260** and/or an upper aperture **270** therein. The apertures **260**, **270** may be positioned about the middle of the discharge chute **220** or otherwise. The lower aperture **260** may extend from the discharge slot **230** down for part or all of the length of the discharge chute **220**. The upper aperture **270** may extend up the length of the discharge chute **220** and into the substantially curved portion **210** of the front cover **130**. The apertures **260**, **270** may have any suitable size, shape, or configuration. Specifically, the apertures **260**, **270** may be sized so as to permit a user to grasp the leading edge of the sheet product **105** and pull the sheet product through the discharge slot **230** and the discharge chute **220**. Other components and other configurations may be used herein.

The housing **120** of the mechanical dispenser **100** may define an interior roll space **280**. The interior roll space **280** may be sized and shaped so as to accommodate the size of a full new roll **110** intended to be used therein. A roll support mechanism **290** may be positioned within the interior roll space **280**. As is shown in FIG. **4**, one example of the roll support mechanism **290** may include a first arm **300**, a second arm **310**, and a connecting rail **320** therebetween. The connecting rail **320** may extend from the first sidewall **160** to the second sidewall **170** for pivoting motion therein. In an alternative configuration, the arms **200**, **310** may be attached to the sidewalls **160**, **170** without the connecting rail **320**. Likewise, the pivot feature also may be incorporated into the arms **300**, **310** without the use of the connecting rail **320**. Other types of roll support structures may be used herein.

Generally described, the first arm **300** may include a first flange **330** and a first spring **350**. The second arm **310** may include a second flange **340** and a second spring **360**. The springs **350**, **360** may be attached to the flanges **330**, **340** and to the sidewalls **160**, **170** or elsewhere. The springs **350**, **360** may bias the roll support mechanism **290** towards the discharge chute **220**. Other types of biasing mechanisms also may be used herein. For example, sliding brackets, pivoting arms, and the like also may be used. The first arm **300** may include a first plug cup **370** and the second arm **310** may include a second plug cup **380**. The plug cups **370**, **380** may be sized for a plug **390** of the roll **110** to slide therein for easy self-loading. Specifically, the plugs **390** of a full new roll **110** may fit into the plug cups **370**, **380** and/or otherwise be positioned and supported therein. Alternatively in the context of a coreless roll **110**, the arms **300**, **310** may have appropriately sized bosses or other types of extensions to support the roll **110** therein without the use of the plug cups **370**, **380**. Other components and other configurations may be used herein.

In use, the front cover **130** of the mechanical dispenser **100** may be opened as is shown in FIG. **5**. Specifically, the user may release the locking mechanism **190** and swing the front cover **130** open along the pivot rod **180**. In the open position, the substantially curved portion **210** of the front cover **130** accommodates the size of a full new roll **110** intended to be used therein. The springs **350**, **360** of the roll support mechanism **290** may bias the arms **300**, **310** forward in the direction of the roll **110**. The roll **110** thus may roll towards the roll support mechanism **290** with the plugs **390** of the roll **110** sliding within the plug cups **370**, **380** for easy self-loading as the front cover **130** is closed. The roll **110** may be installed in an underfeed orientation such that the leading edge of the sheet product **105** may be fed from the bottom of the roll **110**. The leading edge of the sheet product **105** may be pulled through the discharge chute **220** and the front cover **130** may be closed and locked. The mechanical dispenser **100** is now ready for dispensing.

As is shown in FIGS. **6-8**, the roll support mechanism **290** forces the roll **110** against the inside of the front cover **130**. Specifically, the roll support mechanism **290** may force the roll **110** into contact with the front cover **130** at a fixed contact area **400**. The fixed contact area **400** may be at a predetermined distance from the discharge chute **220** and the discharge slot **230** along a length of the substantially straight portion **200** and a length of the chute curved portion **225** of the front cover **130**. The leading sheet product **105** thus may extend from the fixed contact area **400** along the substantially straight portion **200** and then bend into the chute curved portion **225** of the discharge chute **220** towards the discharge slot **230**. Force may be applied to the roll **110** in other ways including the force of gravity.

During the dispensing of the sheet product **105**, any abrupt jerking forces may be substantially absorbed by the length of the sheet product **105** within the chute curved portion **225** of the discharge chute **220** without being translated to the perforations **115** below the fixed contact area **400**. Keeping any such abrupt forces localized above the fixed contact area **400** thus may prevent the sheet product **105** from separating before the next sheet product **105** extends into the discharge chute **220**. This separation protection may be particularly useful at the start of a pull so as to allow the roll **110** to overcome the "at rest" static inertia. Likewise, the use of the underfed orientation of the roll **110**

may allow the pull force resistance to be lower given that any over spin may be directed towards the top of the housing **120**. The underfed orientation of the roll **110** also assists in maintaining the roll **110** in contact along the fixed contact area **400** during a pull. Other suitable locations of the fixed contact area **400** are contemplated.

The roll support mechanism **290** maintains the roll **110** in contact with the fixed contact area **400** as the diameter of the roll **110** is reduced. The roll support mechanism **290** thus may assist in maintaining pull force resistance on a stationary leading sheet product regardless of the diameter of the roll **110**. As the diameter of the roll **110** is reduced, the corresponding spring force also may be reduced as the springs **350**, **360** relax. The pull force resistance may be based on the interrelationship of the diameter of the roll **110**, the weight of the roll **110** resting against the fixed contact area **400**, the spring forces, and the overall housing geometry. Other components and other configurations may be used herein.

The discharge slot **230** of the discharge chute **220** may be a set distance from the fixed contact area **400**. This set distance assists in providing a leading edge of the sheet product **105** in or through the discharge slot **230** or within the apertures **260**, **270** of the discharge chute **220**. The apertures **260**, **270** of the discharge chute **220** allow the leading edge of the sheet product **105** to be pulled therethrough without having to open the front cover **130** to gain access to the tail.

As the perforations **115** of the sheet product **105** pass through the restricted width **240**, the sheet product **105** may begin to wrinkle or buckle such that high stresses may be created on the outer most perforations. These high stresses may induce the perforations **115** to start bursting at one or both of the outer edges. This bursting may continue towards the center or the opposite end of the sheet product **105** and eventually may result in the separation of the sheet product **105** along the perforation line **115** as the next sheet product **105** is pulled into the dispensing chute **220**.

The use of the roll support mechanism **290** and the restricted width **240** of the discharge chute **220** thus may prevent premature separation of the sheet products **105** before the presentation of the next sheet product **105**. Specifically, the restricted width **240** of the discharge chute **220** promotes bursting of the perforations **115** along at least part of the length of the discharge chute **220** and hence as the next sheet becomes available. Likewise, the apertures **260**, **270** provide sufficient space to allow user to grasp the next sheet if the sheet does not extend beyond the chute **220**. The contact of the roll **110** at the fixed contact area **400** by the roll support mechanism **290** reduces the forces on the following perforations **115** so as to aid in keeping the remaining sheet products **105** intact. The mechanical dispenser **100** thus promotes the easy and efficient dispense of a single sheet regardless of the pull forces thereon.

FIGS. **9** and **10** show an alternative embodiment of a mechanical dispenser **410** as may be described herein. Instead of the front cover **130** with the substantially straight portion **200** and the substantially curved portion **210**, the mechanical dispenser **410** may include a top cover **420**. The outer housing **120** thus may have the top cover **420**, a front wall **430**, the rear wall **140**, the base **150**, the first sidewall **160**, and the second sidewall **170**. The top cover **420** may extend from the front wall **430** to the rear wall **140** in a first direction and from the first sidewall **160** to the second sidewall **170** in a perpendicular second direction. The top cover **420** may pivot open and shut about the pivot rod **180**. In this example, the pivot rod **180** may be position about the top of the rear wall **140**. Other pivot positions also may be used.

The discharge chute **220** may be positioned about a middle of the top cover **420**. The discharge chute **220** may be similar to that described above and may extend upwardly from the top cover **420**. The discharge chute **220** may include the discharge slot **230** with the restricted width **240** therein. The discharge chute **220** may include the lower aperture **260** and the upper aperture **270** therein. Other components and other configurations may be used herein.

The outer housing **120** may define the interior roll space **280** therein. The interior roll space **280** may include the roll support mechanism **290** therein. The roll support mechanism **290** may include on or more arms. In this example, the first arm **300** with the first plug cup **370**, the second arm **310** with the second plug cup **380**, and the connecting rail **320** therebetween. Any number of arms **300**, **310** may be used herein. The arms **300**, **310** may be maneuverable up and down along a first rail **440** position on or about the first sidewall **160** and a second rail **450** positioned on or about the second sidewall **170**. The rails **440**, **450** may extend from the base **150** to the top cover **420** about the middle of the sidewalls **160**, **170**. One or more springs **350**, **360**, either extension or compression, may bias the roll support mechanism **290**, and hence the roll **110**, upward against the top cover **410**. Any number of the springs **350**, **360** may be used herein. Other types of biasing members may be used herein. Other components and other configurations may be used herein.

In use, the top cover **410** may be opened and the roll **110** may be dropped into the roll support mechanism **290**. The leading edge of the roll **110** may be extended through the discharge chute **220** and the top cover **410** may be closed. The springs **350**, **360** bias the roll into contact with the top cover **410** with a fixed contact area **400** on either or both sides of the discharge chute **220**. The restricted width **240** of the discharge slot **230** assists in bursting the perforations **115** as is described above. The vertical orientation of the discharge chute **220** on the top cover **410** also may promote an angled pull as the user grasps the leading edge of the sheet product **105**.

FIG. **11** shows an alternative embodiment of a portion of a mechanical dispenser **460** as may be described herein. In this example, the mechanical dispenser **460** may have the discharge chute **220** positioned about a bottom half of a front wall **470** of the outer housing **120**. The discharge chute **220** thus may have a downwardly angled configuration **480**. The discharge chute **220** may be similar to that described above and may include the discharge slot **230** with the restricted width **240** therein. The discharge chute **220** may include the lower aperture **260** and the upper aperture **270** therein. Other components and other configurations may be used herein.

The mechanical dispenser **460** as illustrated may not include the roll support mechanism **290** therein. Rather, the roll **110** may be dropped into interior space **280** about the base **150**. The mechanical dispenser **460** thus relies on gravity to bias the roll **110** against a fixed contact area **400** about the base **150**. Springs or other types of biasing devices and other mechanisms also may be used. The roll **100** may be positioned in the underfeed orientation such that the leading edge of the sheet product **105** may be fed from the bottom of the roll **110**. As above, the restricted width **240** of the discharge slot **230** assists in bursting the perforations **115** as the leading edge of the sheet product **105** is pulled from the discharge chute **220**. Other components and other configurations may be used herein.

It should be apparent that the foregoing relates only to certain embodiments of the present application and the resultant patent. Numerous changes and modifications may be made herein by one of ordinary skill in the art without departing from the general spirit and scope of the invention as defined by the following claims and the equivalents thereof.

We claim:

1. A dispenser for a roll of sheet product, comprising:
a housing;
the housing comprising a first wall;
the first wall comprising a discharge chute; and
a roll support mechanism positioned within the housing;
the roll support mechanism forcing the roll against the first wall at a fixed contact area.

2. The dispenser according to claim **1**, wherein the housing comprises a front cover.

3. The dispenser according to claim **1**, wherein the first wall comprises a substantially curved portion sized to accommodate the roll.

4. The dispenser according to claim **3**, wherein the first wall comprises a substantially straight portion adjacent to the substantially curved portion and wherein the fixed contact area is positioned about the substantially curved portion and the substantially straight portion.

5. The dispenser according to claim **1**, wherein the discharge chute comprises a chute curved portion about the fixed contact area.

6. The dispenser according to claim **1**, wherein the discharge chute comprises a discharge slot at an end thereof.

7. The dispenser according to claim **1**, wherein the discharge chute comprises one or more protrusions therein.

8. The dispenser according to claim **1**, wherein the discharge chute comprises a restricted width therein.

9. The dispenser according to claim **8**, wherein the restricted width comprises a slot width that is less than a roll width.

10. The dispenser according to claim **1**, wherein the discharge chute comprises one or more apertures therein.

11. The dispenser according to claim **10**, wherein the one or more apertures comprise an upper aperture and wherein the upper aperture extends into the first wall.

12. The dispenser according to claim **1**, wherein the roll support mechanism comprises at least one biasing member to bias the roll against the fixed contact area.

13. The dispenser according to claim **1**, wherein the roll support mechanism comprises a pair of arms for supporting the roll therebetween.

14. The dispenser according to claim **13**, wherein each of the pair of arms comprises a plug cup thereon sized to accommodate a plug of the roll.

15. The dispenser according to claim **13**, wherein the roll support mechanism comprises a pair of rails for the pair of arms to maneuver thereon.

16. The dispenser according to claim **13**, wherein the roll support mechanism comprises one or more springs in communication with the pair of arms.

17. The dispenser according to claim **1**, wherein the first wall comprises a front cover.

18. The dispenser according to claim **1**, wherein the first wall comprises a top cover.

19. The dispenser according to claim **1**, wherein the first wall comprises a front wall.

20. A method of dispensing sheet product from a roll of sheet product in a dispenser, comprising:
positioning the roll within the dispenser in an underfeed orientation;
forcing the roll against a wall of the dispenser;
pulling a first sheet product through a discharge chute with a restricted width; and
separating a number of perforations between the first sheet product and a second sheet product as the number of perforations pass in or about the restricted width.

21. A dispenser for a roll of sheet product, comprising:
a housing;
the housing comprising a first wall;
the first wall comprising a discharge chute;
the discharge chute comprising a restricted width; and
a roll support mechanism positioned within the housing;
the roll support mechanism forcing the roll against the first wall.

22. The dispenser according to claim **21**, wherein the first wall comprises a front cover.

23. The dispenser according to claim **21**, wherein the discharge chute comprises a discharge slot at an end thereof.

24. The dispenser according to claim **23**, wherein the restricted width is positioned about the discharge slot.

25. The dispenser according to claim **23**, wherein the discharge slot comprises one or more protrusions therein.

26. The dispenser according to claim **21**, wherein the restricted width comprises a slot width that is less than a roll width.

27. The dispenser according to claim **21** wherein the discharge chute comprises one or more apertures therein.

28. The dispenser according to claim **27**, wherein the one or more apertures comprise an upper aperture and wherein the upper aperture extends into the first wall.

29. A method of dispensing sheet product with perforations from a roll of sheet product in a dispenser, comprising:
positioning the roll within the dispenser;
pulling a first sheet product in a tangential direction away from the roll;
passing the first sheet product through a discharge chute with a restricted width;
forcing the roll against a wall of the dispenser; and
separating a number of perforations between the first sheet product and a second sheet product as the number of perforations pass in or about the restricted width.

30. A method of loading a roll of sheet product into a dispenser, comprising:
placing the roll in a curved cover of the dispenser;
biasing a roll support mechanism towards the roll in the curved cover of the dispenser;
rolling the roll into the roll support mechanism; and
closing the curved cover.

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